

# Teachers' Temperament, Teacher-Student Relationships, Teaching Method and Learning Engagement: A Moderated Mediation Analysis

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DOI: <https://dx.doi.org/10.47772/IJRISS.2024.805187>

Received: 21 April 2024; Revised: 03 May 2024; Accepted: 14 May 2024; Published: 25 June 2024

## ABSTRACT

**Purpose** The purpose of this study is to investigate the impact of teachers' temperament and method of teaching on the relationship between teacher-student relationships and learning engagement of students of Taraba State University, Jalingo.

**Design/Approach/Method** The study adopted a cross-sectional survey of 400 undergraduate students. Utilising the Hayes Process macro, we tested the moderating impact of teacher temperament on the relationship between teacher-student relationships and learning engagement. Also, we tested the mediating impact of teaching methods on teacher-student relationships and learning engagement.

**Findings** Based on the analyses, the study found that teachers' temperament significantly moderates the impact of teacher-student relationships on learning engagement such that low and average teachers' temperament strengthens the positive impact of teacher-student relationships on learning engagement. Also, the study found that teacher-student relationships have a significant impact on learning engagement. But teacher-student relationships have no significant impact on teaching methods.

**Originality/Value** This is one of a few studies on the relationships between teachers' temperament, teacher-student relationships, teaching methods and the impact on learning engagement in Taraba State University. It provides sound basis for educational managers and policy makers to provide quality teacher education in university setting.

**Key words:** Teacher, temperament, method, relationships, learning engagement

## INTRODUCTION

The increasing concern of teachers, parents and educators today is to see that students are productively engaged in learning in schools. This is due to advancements in technologies and the increasing diversity of tertiary students' enrolment that has put pressure on teachers to constantly review their relationships with students and vary their methods of teaching to ensure learning engagement for contemporary relevance and to cater for different learning styles (Jense and Owen, 2003 cited in Arjomandi, Seufert, O'Brien and Anwar, 2018; Samuel *et al.*, 2019). Lack of engagement can lead to poor academic performance evidenced in inability to understand and retain information, lower grades in tests and examinations, and a limited understanding of the subject matter. Without engagement, students may lack these essential skills, putting them at a disadvantage when entering the job market. On the other hand, active engagement in university prepares

students for the workforce by developing skills, such as critical thinking, problem-solving, and communication.

For teachers to be effective across the continuum of learning styles, many studies suggest the adoption of appropriate methods of teaching. As such teaching methods appear to fit neatly within the broad concept of student learning engagement (Arjomandi *et al.*, 2018). Also, teachers' temperament in the classroom allows teachers to be aware of their natural disposition, personality traits and emotional styles and work to leverage their strengths to create a positive and motivating learning environment that encourages active participation, curiosity and a genuine desire to learn (Sieberer-Nagler, 2016).

Several years of research have provided a substantial body of evidence demonstrating that those institutions that fully engage their students in the variety of activities that contribute to valued outcomes of college can claim to be of higher quality compared with other colleges and universities where students are less engaged (Smith, 2016; Strati, Schmidt and Maier, 2017). Concerned about the quality of education that is received by students of tertiary institutions, many universities are taking serious measures to shift from traditional, teacher-centered approaches to more student-centered and active learning methods (Garrett, 2008; Onwe and Uwaleke, 2019). As a result, educators and researchers are increasingly interested in understanding how teacher-student relationships enhance students' participation, motivation, and commitment to the learning process.

Despite the importance of teacher-student relationships, their impact on learning engagement has not attracted enough attention (Samuel *et al.*, 2019). Learning engagement is about creating a positive and motivating learning environment that encourages active participation, curiosity, and a genuine desire to learn. According to Montenegro (2017), student learning engagement is the specific condition in which a set of motivational variables such as persistence and focused actions interact among themselves and is defined as relatively public, objective, and observable classroom events. When students are engaged, they are more likely to excel academically and develop a lifelong love of learning. Scholars have acknowledged that student learning engagement is a dynamic concept that requires attention and effort from both educators and students themselves (Fuller, Wilson and Tobin, 2011). Learning engagement can be emotional and intellectual. Despite the importance of learning engagement to the academic success of students, it has been found that many tertiary students were not highly engaged in classroom activities and instances of students' engagement decreased as students advances in their educational levels (Sandlin, 2019). Thus, in this context, the impact of teacher-student relationships on learning engagement deserves scrutiny.

Moreover, teachers are experts in the subjects they teach. However, the knowledge of the subject matter alone is not sufficient to ensure that teachers will be effective and that students will be successful in their learning. To be effective, teachers also must have an understanding of their student's interests and styles of learning (Sieberer-Nagler, 2016), have an appropriate grasp of teaching methods and exhibit an appropriate teachers' temperament for teachers to be successful in teaching and for students to be successful in their learning.

However, are the university students engaged in the classroom? Additionally, what teacher factors will directly or indirectly affect students learning engagement? What kind of impact/relationship exists among the various factors? These factors are critical to learning effectiveness and teaching effectiveness analysis (Darling-Hammond, 2010; Aina, Olanipekun, and Garuba, 2015). The research literature talks about students' temperament, teacher-student relationships and student engagement (Foo and Kutty, 2023). Literature seldom talks about teacher temperament, teaching methods and teacher-student relationships and learning engagement. Therefore, the impact of the relationship between teacher temperaments, teacher-student relationships, and teaching methods on learning engagement is what this study wants to emphasise. As students are the main body of learning, individual differences reflect in their subject feelings with learning engagement. This is consistent with Coates (2007) who stressed that there is growing recognition of the importance of understanding student learning engagement and the problem of disengagement in tertiary institutions.

## LITERATURE REVIEW AND HYPOTHESES

This study is anchored on the Theory of Self-Determination which has been used to explain the positive effect of teacher-student relationships on learning engagement (Kincade *et al.*, 2020) and the conceptual framework (such as Fredricks *et al.* 2004; Kahu, 2013) for student engagement to explain how teacher-student relationships and learning engagement can trigger proximal consequences. A research model (see Figure 1) was therefore proposed based on prior literature (Fredricks *et al.* 2004; Kahu, 2013; Rimm-Kaufman and Sandilos, 2012; Varga, 2017, Delphino, 2019) to explain the association between teacher-student relationships on learning engagement. The conceptual framework (Figure 1) and the Theory of Self-Determination emphasizes that student need to experience emotional involvement from their teachers. Furthermore, students who have positive relationships with teachers are less likely to avoid school (Rimm-Kaufman and Sandilos, 2012). The most powerful weapon teachers have when trying to foster a favourable learning climate is a positive relationship with their students (Boynton and Boynton, 2005). Many factors impact the relationships between teachers and students, yet one point is clear; multidimensional relationships in school play a significant role in developing the learning environment. Teachers can fulfill these needs by building and maintaining relationships with their students which will ensure active learning engagement in the classroom. Student engagement can trigger proximal consequences.

Proximal consequences are academic or social. Academically, students will have higher achievements (including marks) and a higher level of learning, while socially they may feel satisfaction from their learning experience and improved well-being. For this research, we were guided by five hypotheses (see our research model in Figure 1).

### Teacher Temperament

Students who perceive their teachers as more supportive have better achievement outcomes (Rimm-Kaufman and Sandilos, 2012). This viewpoint suggests teachers' variables such as temperament are equally important as other teachers' variables to students' engagement. When students feel a sense of control and security in the classroom, they are more engaged because they approach learning with enthusiasm and vigour. Students become active participants in their education (Skinner & Green, 2008; Maulana, Opdenakker, Stroet, and Bosker, 2013). Therefore, the first step to helping a student become more motivated and engaged, and thus academically successful, is to have a warm personality and good disposition towards the students. A lot of studies have shown that there is a beneficial teacher-student relationship based on teacher temperament such as improving social interactions, and communication (Khan, *et al.*, 2017; Hurst *et al.*, 2013) and enhancing students learning. Despite researchers' growing interest (Delphino, 2019), studies have been conducted on predicting the relationship between teachers' temperament and student learning engagements but little work has described the mediating role of teachers' temperament on learning engagement among university undergraduates. We, therefore, propose that:

**H01:** Teachers' temperament will not moderate the relationship between teacher-student relationship and learning engagement such that higher teachers' temperament weakens the positive impact of teacher-student relationships on learning engagement.

### Teacher-students relationships

One of the factors that have the most significant impact on student engagement is the student-teacher relationship (Jensen, 2013). Burgeoning literature points to the importance of understanding the influence of proximal processes like the development of high-quality student-teacher relationships on children's and adolescents' outcomes (Baker, Grant and Morlock, 2008). Teacher-student interaction is very important in school as it aids student success (Aina *et al.*, 2015). Student-teacher relationships may either positively or negatively affect student learning engagement. When students perceive that their teachers provide emotional, social, or instructional support, they often students will achieve higher rates of success in engagement (Suldo *et al.*, 2009 cited in Sandlin, 2019). Given the importance of student-teacher relationships and the

impact it has on student engagement, it is necessary to have a firm understanding of this relationship and what affects it. Klem and Connell (2004) focused on the specific conditions that contribute to academic success for students. Their studies asserted that students who dropped out of high school cited a lack of positive relationships with adults in school as one of the primary motivations for discontinuing their education. The results of both studies also indicated that a positive student-teacher relationship is a vital component in promoting students' classroom engagement and academic achievement. Therefore, we hypothesise that:

**Ho2:** Teacher-student relationships have no significant impact on learning engagement.

**Ho3:** Teacher-student relationships have no significant impact on teaching methods.

### Teaching Methods

Research has explored the impact of specific teaching methods and interventions on student engagement. For example, studies have examined the effectiveness of active learning strategies, technology integration, collaborative learning, and experiential learning activities in promoting student learning engagement (Inayat and Ali, 2020). As teachers spend an incredible amount of time with their students over the year, it is a teacher's responsibility to foster an inclination for learning. Allan, Clarke and Jopling (2009) analyzed students' perceptions of effective teaching and found that teachers with high expectations from students in a supportive environment were perceived by students as a determinant factor for their academic achievement and success in higher education. Students' perceptions of academic load and inappropriate assessments by teachers encouraged shallow learning, whereas perceptions of supportive teaching encouraged positive approaches to academics. Therefore, this research proposes the following hypothesis

**Ho4:** Teacher-student relationship has no significant impact on the teaching method.

**Ho5:** The teaching method does not mediate the impact of teacher-student relationships on learning engagement.

### Learning engagement

Student engagement refers to meaningful engagement throughout the learning environment. It is best understood as a relationship between the student and the school, teachers, peers, instruction and curriculum. Productive engagement is an important means by which students develop feelings about their peers, professors, and institutions that give them a sense of connectedness, affiliation, and belonging, while simultaneously offering rich opportunities for learning and development (Bensimon, 2009). Student engagement has three dimensions which are behavioral, emotional, and cognitive. Behavioural engagement refers to student's participation in academic and extracurricular activities. Emotional engagement refers to student's positive and negative reactions to peers, teachers and school, while cognitive engagement talks about student's thoughtfulness, and willingness to master difficult skills (Fredericks *et al.*, 2004).

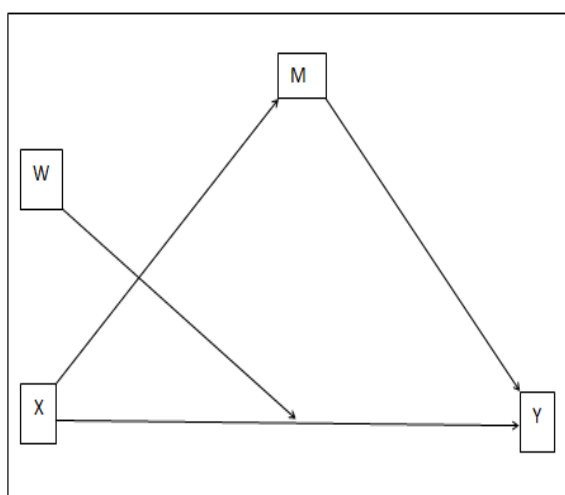


Figure 1: The Conceptual model.

Note: X = Teacher-student relationships, Y = Learning engagement, W = Teacher temperament, M = Teaching methods.

## METHODS

The design adopted for the study was a cross-sectional survey design. The design was appropriate because the issues investigated were enumerated and measured descriptively without the manipulation of respondents or their settings (Siedlecki, 2020).

The study's population consisted of 400 Level, final-year students of Taraba State University, Jalingo. Out of the 1,240 students, a sample of 400 was used for the study. The sample size was drawn using stratified proportionate sampling and convenient sampling based on the five Departments in the Faculty of Education of the University. This was used to assign realistic sample proportions to the department because the departments have varied population figures that require fair representation. These Departments are: Arts Education, Educational Foundations, Science Education, Guidance and Counseling, and Vocational Technical Education. Convenient sampling was applied because respondents could not be assembled at the same time in a particular location for any rigorous selection process. The final-year students were used because they have in-class experience undergoing teaching practice during the time of data collection while the other levels were excluded because of the delayed resumption of their academic programme.

The instrument for data collection was a questionnaire titled "Teachers Temperament Teaching Methods Teacher-Student Relationships and Learning Engagement Questionnaire" (TTTMTSRLEQ). The instrument was based on survey scales adapted from literature (such as Fredricks *et al.* 2004; Fredricks and McColskey, 2012; and Kahu, 2013), and pilot-tested for use in this study. Experts from Taraba State University, Jalingo validated the instrument. The internal consistency of the scale was obtained using the Cronbach alpha test and yielded a coefficient of .84. The 28-item survey instrument examined students' perceptions of teachers' temperament, teacher-student relationships, teaching method and learning engagement among students of Taraba State University, Jalingo.

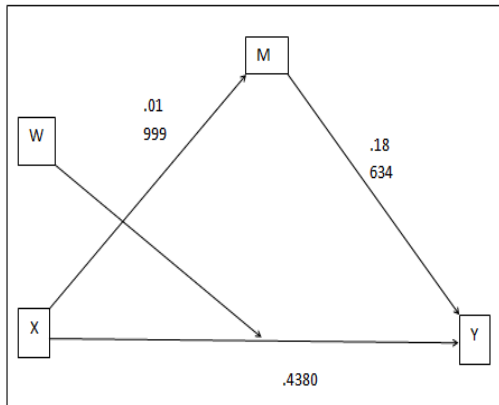
Four survey scales relevant to this study included teacher temperament, Teacher-Student Relationships, Teaching Method, and Learning Engagement. Scale items were measured using a 4-point response format (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree). For the hypothesis, a moderated mediated model using the PROCESS macro (version 4.0; Hayes, 2018) for SPSS was used to test the null hypothesis on whether there is a significant relationship between the variables of the study.

Teacher-Student relationship (TSR) ---- Teacher Temperament (TT) ---- Learning Engagement (LE). The present study used model 5, and the index of moderated mediation was tested at a 95% confidence interval of 5,000 numbers of bootstrap samples. Moderated mediation analysis was further probed by estimating and plotting the conditional direct and indirect effects of TTTMTSRLEQ at values  $p < .05$ , corresponding to the 16th, 50th, and 84th percentile points.

## RESULTS

Descriptive data on moderated mediated results are presented in Table 1. The model summary provides a summary of the model with R, R-Sq, F statistics, and P-value for the overall model. It shows the coefficients with the impact of teacher-student relationships (TSR) on learning engagement (LE), the moderating role of teachers' temperament (TT) and the mediating impact of teaching method (TM).





**Figure 2:** Statistical diagram depicting moderated mediation model of association between teacher-student relationships (x) and learning engagement (y) with the teaching method (m) as the mediator and teachers’ temperament (w) as the moderator.

**Table 1: Moderated Mediated Results**

Model Summary						
R	R-sq	MSE	F	Df1	df2	p
.0371	.00.14	.44.9806	3.5493	1.0000	398.0000	.4590
model	coeffi	se	t	p	LLCI	ULCI
Outcome variable Teaching method						
constant	59.7500	.3353	178.1784	.0000	59.0907	60.4093
TSRel	-.0199	.0268	-.74111	.4590	-.0725	.0328
Outcome variable Learning Engagement						
R	R-Sq	MSE	F	Df1	Df2	p
.4527	.2050	153.5509	25.4598	4.0000	395.0000	.0000
	coeff	se	t	p	LLCI	ULCI
constant	49.0657	5.6026	8.7577	.0000	38.0510	60.0803
T-Student Relationship	.4380	.0501	8.7418	.0000	.3395	.5365
Teaching method	.1863	.0932	1.9990	.0463	.0031	.3695
Teacher temperament	.1759	.0464	3.7914	.0002	.0847	.2671
Int_1	-.0068	.0032	-2.1139	.0352	-.0132	-.0005

Test (s) of highest order unconditional interaction(s)						
R2-chng	F	Df1	Df2	p		
X*W	.0090	4.4685	1.0000	395.0000	.0352	
Focal predict: Teacher- Student Relationship (X)						
Mod var: Teachers Temperament (W)						
Conditional effects of the focal predictor at values of the moderator(s)						
Teacher temperament	Effect	se	t	p	LLCI	ULCI
-13.5087	.5302	.0614	8.6363	.0000	.4095	.6508
.0000	.4380	.0501	8.7418	.0000	.3395	.5365
13.5087	.3458	.0711	4.8646	.000	.2061	.4856
Moderator value (s) defining Johnson-Neyman significance region(s)						
Value	% below	% above				
30.5167	99.5000	.5000				
Conditional direct effect(s) of X on Y						
Teachers temperament	Effect	se	t	p	LLCI	ULCI
-13.5087	.5302	.0614	8.6363	.0000	.4095	.6508
.0000	.4380	.0501	8.7418	.0000	.3395	.5365
13.5087	.3458	.0711	4.8646	.0000	.2061	.4856
Indirect effect(s) of X on Y:						
Teaching method	Effect	se	t	p	LLCI	ULCI
	-.0037	.0059	-.0163	.0076		

Table 1, and Figure 2 show the results of the moderated mediation analysis based on (Hayes, 2018). The analysis reveals the direct effect and indirect effect between Teacher-Student Relationships and Learning Engagement through Teaching Methods moderated by Teachers' Temperament.

### Main impact

As shown in Table 1, the null hypotheses 1, 2, 3 and 5 were rejected. The alternate hypotheses were accepted. However, the null hypothesis 4 was retained. Our result indicated teacher method was found to have a significant impact on learning engagement ( $b = .1863, t = 1.9990, p < .0463$ ). Teacher-student relationships have a significant impact on learning engagement ( $b = .4380, t = 8.7418, p < .0001$ ), and teacher-student relationships have no significant impact on teaching method ( $b = -.0199, t = -.7411, p < .0001$ ).

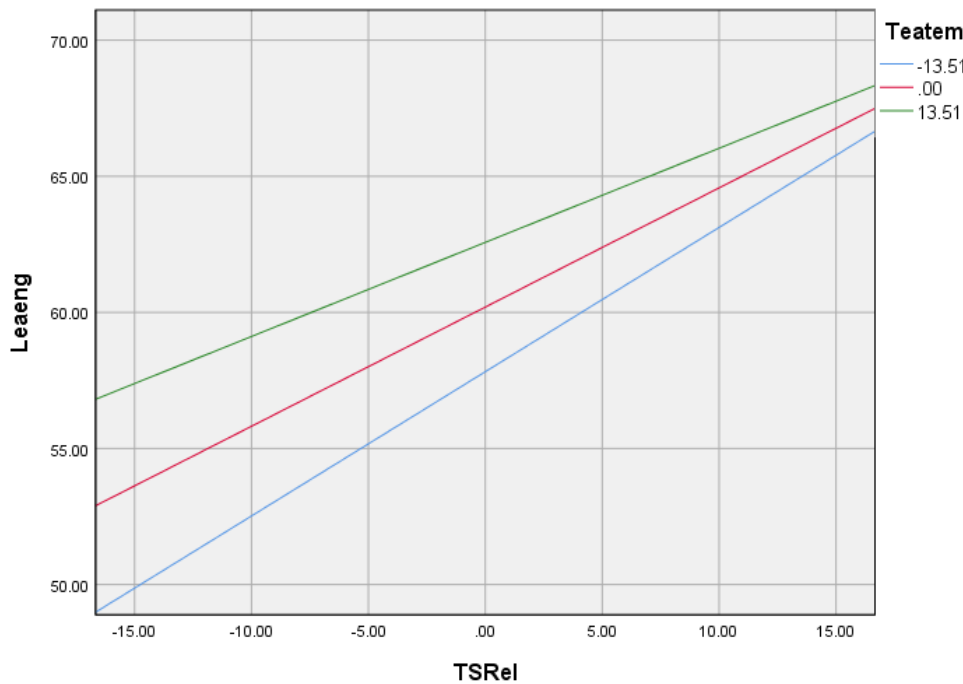
### Moderated Mediation analysis

The teaching method was found to have a significant impact on learning engagement ( $b = .1863$ ,  $t = 1.9990$ ,  $p < .0463$ ). The teaching method was found to mediate the relationship between teacher-student relationships and learning engagement. The direct effect and indirect effect indicate that there is mediation but it is partial mediation. Both direct and indirect effect is complimentary.

The teacher-student relationship has a significant impact on learning engagement ( $b = .4380$ ,  $t = 8.7418$ ,  $p < .0001$ ), here there is a direct impact. Also, we found a significant indirect impact of teacher-student relationships and teaching methods on learning engagement where  $a1(.0199) * b1(.1863) = .0037$  (see Table)

Amazingly, contrary to the expectations, the study found that teacher-student relationships have no significant impact on the teaching method ( $b = -.0199$ ,  $t = -.7411$ ,  $p < 0.0001$ ). This is path  $a1$ . The null hypothesis was therefore retained.

We found a significant moderating impact of teacher temperament on the relationship between teacher-student relationship and learning engagement. Table 1 and Table 2 revealed that R-Sq change was found to be significant ( $p = .0352/2$ ) (1 tailed). However, as shown in Fig. 2, the impact of teacher-student relationships on learning engagement is much stronger among individuals who exert low and average teachers' temperament. These findings suggest that those with low and average teacher temperament tend to increase in teacher-student relationships which lead to significant change in learning engagement.



**Figure 3:** Graphical impact of the moderation effect of teachers' temperament on teacher-student relationships, and learning engagement.

### DISCUSSION

Five main findings emerged from this study. First, the study found that teachers' temperament significantly moderates the impact of teacher-student relationships on learning engagement such that low and average teachers' temperament strengthens the positive impact of teacher-student relationships on learning engagement. This is congruent with previous studies (Rudasill *et al.*, 2010), that talk of the potentially



predictive value of temperament. Difficult temperament contributes to student-teacher quality (Eisenhower *et al.*, 2007; Rudasill *et al.*, 2010).

The study found that teacher-student relationships have a significant impact on learning engagement. This agrees with Foo and Kutty (2023) and Spilt *et al.*, (2011). Essentially, student-teacher interaction strengthens a sense of belongingness and cohesion for engagement in learning. Students seem to give more importance to relations with the teacher, which is a verified predictor of student satisfaction in learning and engagement (Spilt *et al.*, 2011; Smith, 2016). The participants agree that on the importance of strong personal attachments of teachers to their students is important for effective teaching and learning. Teachers also feel the basic need for relatedness, especially with students in their classes. They maintained that when teachers have negative relationships with students, it can lead to stress and feelings of alienation, which affects both their practice and their well-being. The importance of positive teacher-student relationships extends to both parties - teachers place value on the personal relationships they have with students in their classes.

The study found that teacher-student relationships have no significant impact on teaching methods. This is contrary to Ryan and Deci (2000). According to them, when relatedness needs are met in a specific context, such as the classroom, individuals are more motivated to behave in adaptive ways, engage with tasks, persist in the face of failure and respond creatively to challenges in that context. As noted by da-Luz (2015) in their study, students benefit and are motivated when their teachers create a safe and trustful environment. Also, the methods and strategies teachers use, make students feel engaged and stimulated to participate in the learning process. Therefore, a teacher using appropriate teaching methods enables students to be more engaged when they have opportunities to interact with the material, their peers, and the instructor. A teacher using methods that encourage student participation, such as asking questions, facilitating discussions, and incorporating interactive technologies, can boost engagement. Teachers who make an effort to include all students, especially those who are off task or perform at a low level, will see fewer task behaviours and higher academic achievement over time.

The study found that teaching method has a significant impact on learning engagement. This agrees with Inayat and Ali (2020). Appropriate teaching methods have the potential to contribute to active learning where students are engaged in the learning activities. Hence studies have encouraged the use of interactive tools such as annotating materials while presenting, which can then be saved for subsequent online circulation in an IT class. Similarly, teachers using methods that encourage student participation, such as asking questions, facilitating discussions, and incorporating interactive technologies, can boost learners' engagement. The study found that teaching method mediates the impact of teacher-student relationships on learning engagement. This agrees with Arjomandi *et al.*, (2018). Studies have maintained that when students believe their teachers respect their individuality, they tend to be more engaged in the learning process. Similarly, a good teacher-student relationship increases learners' sense of accountability for their academic progress. Therefore, teachers should be encouraged to support students and provide constructive feedback to motivate them and improve their academic performance.

The study explores the primary role of teacher temperament and relationships in creating the capacity for students to engage the classroom as a setting for development is a fundamental precursor to understanding our approach to measuring interactions and relations and to changing classroom settings' capacity for engagement. Central to each of these perspectives, and elaborated in this study is an appreciation of learning engagement as a contextualized process mediated by teaching methods and moderated by teacher temperament. If a teacher can make students feel comfortable and confident, then they may not only enjoy the classes and assimilate knowledge, but also enhance positive relationships based on respect and mutual trust, which are the keys to building any relationship in everyday and academic life

## CONCLUSION

Based on the moderated mediation analysis, the results support the hypothesized relationships that teachers' temperament, teacher-student relationships and teaching methods have a notable positive impact on

learning engagement. The study revealed mediation exists between the variables, while the direct and indirect impact is complementary. The results highlight the importance of teachers' disposition and personality, utilising appropriate teaching methods, and fostering positive teacher-student interactions in promoting learning engagement among students at Taraba State University, Jalingo. These findings can inform strategies to enhance teaching effectiveness in a university setting, in this context Taraba State University, Jalingo.

## Implications

The study implies that students benefit from positive teacher-student relationships. Therefore, understanding the primary role of teacher temperaments and relationships in creating the capacity for students to engage the classroom as a setting for development is a fundamental precursor to understanding our approach to measuring interactions and changing classroom settings' capacity for engagement. Teacher development should consider how teachers develop insights into the craft of teaching and how they change their behaviour to improve their instructional techniques and methods. Central to each of these perspectives, and elaborated in this study is an appreciation of learning engagement as a contextualized process mediated by teaching methods and moderated by teacher temperament.

## RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

1. Adequate teacher training and professional development should be given to teachers on how to build their skills and competencies.
2. The university should encourage positive feeling of connectedness, affiliation between students and teachers in academic and extra-curricular activities.
3. There is a need for teachers and students to enhance efforts to improve interpersonal dynamics in the classroom.
4. The university should design a training/seminar on effective student-centred teaching strategies for the faculty members.

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